Elytra, Tokyo, **31** (2): 353–359, November 22, 2003

An Additional New Species of the Genus *Rhagophthalmus* (Coleoptera, Rhagophthalmidae) from Taiwan, with a Key to the Males of the Taiwanese and Japanese Species

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Abstract A new species of the genus *Rhagophthalmus* is described and illustrated from Taiwan under the name of *R. formosanus*, which is the second representative of the genus from the island. A key to the species from Taiwan and Japan is provided for adult males.

Introduction

Only one species, *Rhagophthalmus jenniferae* Kawashima et M. Satô, 2001, has been described from Taiwan as the representative of the rhagophthalmid genus. It is closely allied to the Japanese species, *R. ohbai* Wittmer, 1994. Only a year later of its description, the senior author had an opportunity to examine three specimens of a second Taiwanese species collected by the junior author through the courtesy of Dr. Munetoshi Maruyama of the National Science Museum, Tokyo. After a careful examination, it has become apparent that they are clearly new to science. In the present paper, the authors will describe and illustrate it under the name *Rhagophthalmus formosanus*.

Materials and Methods

The "materials and methods" and the abbreviations employed in the present paper are the same as those explained in Kawashima and Satô (2001).

Description

Rhagophthalmus formosanus KAWASHIMA et SUGAYA, sp. nov.

(Figs. 1–7)

Male. Body feebly shiny, covered all over including appendages with yellowish brown or blackish subrecumbent pubescence. Head capsule black; eyes unfortunately nebulous by dehydration in the type material, probably blackish; antennae brown tinged with yellowish; mandibles shiny, dark brown, paler towards the yellowish bases; other mouth parts yellowish brown; pronotum blackish, becoming more or less lighter towards the sides and base; scutellum yellowish brown; elytra dark brown, entirely tinged olive; coxae and trochanters yellowish brown; femora and tibiae brown; tarsi brown but gradually paler towards apical segments; claws brown; ventral surface of thoraces yellowish brown; abdominal sternites blackish brown.

Body (Fig. 1) elongated oval, gradually dilated towards the distal third of elytra, sides not parallel.

Head (Fig. 1) large and moderately transverse, evidently wider than the maximum width of pronotum, clearly depressed between eyes, rather minutely and irregularly punctate on dorsal surface, the punctures gradually becoming larger towards the basal part of neck area.

Antennae (Fig. 2) 12-segmented, relatively long for a member of the genus, reaching middle of the sides of pronotum; relative length of each segment from scape in the holotype as follows:— 13.5 : 10.5 : 12 : 6.5 : 6 : 8 : 8 : 7 : 7 : 9.5 : 13 : 16.5; scape thick and clavate, about twice as long as wide, widest at the apex; pedicel short cylindrical and thick; 3rd segment (1st flagellar) the longest, clavate and becoming wider towards the apex, twice as long as wide; only 11th (9th flagellar) with lens-like sensillum at the protrudent antero-ventral portion; terminal 12th segment (10th flagellar) slender and spindle-shaped, almost equal in length to the 3rd segment.

Pronotum (Fig. 1) fairly small and short, trapezoidal in dorsal view, widest at the base; anterior margin widely arcuate and produced anteriad; sides straight, gradually divergent towards the base; basal margin clearly sinuate on each side; dorsal surface more or less depressed, irregularly and coarsely punctate; PW/HW 0.96–1.00, PW/PL 1.40–1.48, PW/PA 1.12–1.15, PW/PB 1.00, PL/PW 0.68–0.71, PW/EHW 0.76–0.77.

Scutellum (Fig. 1) triangular or lingulate, closely punctate on the dorsal surface.

Elytra (Fig. 1) broad, widest at apical third, and then narrowed to moderately pointed apices, dehiscent in apical parts; sides distinctly divergent posteriad in proximal two-thirds, narrowly bordered throughout including suture, the margin being concealed at the basal parts by rounded humeli; dorsal surface irregularly rugose; each elytron with three vague costae, EL/PL 5.65–5.81, EL/EW 2.18–2.35, EW/PW 1.71–1.94.

All legs (Fig. 1) not so long but slender; femora fusiform; tibiae almost straight; tarsi relatively long, only a little shorter than the length of tibiae; 3rd and 4th tar-

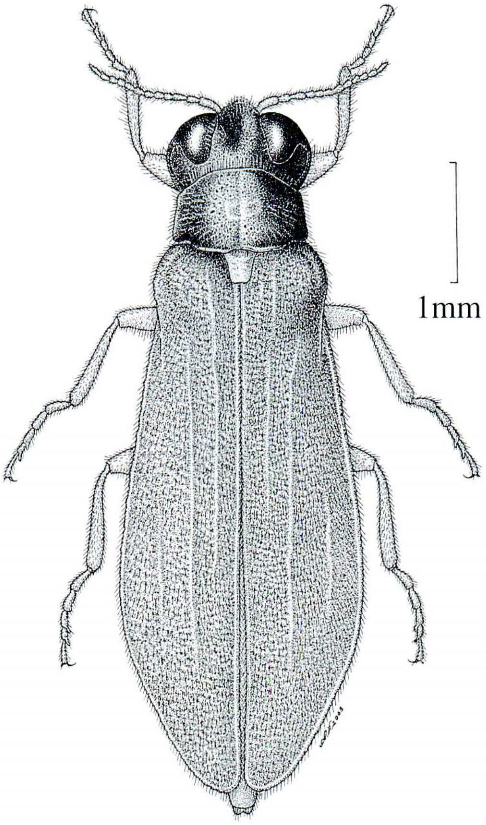
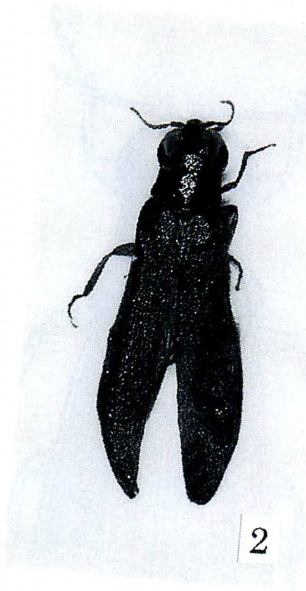
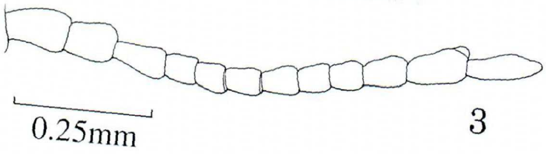


Fig. 1. Habitus of *Rhagophthalmus formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan, dorsal view. Scale: 1.0 mm.

someres with membraneous lingulate lamellae in ventro-apical portions. Claws small and simple, weakly dilated at the bases.

Male genitalia as shown in Figs. 4–5, heavily sclerotized, symmetrically trilobed, weakly flattened dorso-ventrally, broad and relatively rounded as a whole, external surface smooth and glabrous. Basal plate large, elongated oval in dorsal view; distal part fairly extended anteriorly, distal margin almost straight and/or horizontal, with a deep cleft at the center, widely open in venter. Aedeagus very wide, triangular and moderately flattened dorso-ventrally; sides strongly convergent towards the apex, which is minutely rounded or pointed. Parameres spatulate, embracing aedeagus from left and right, joining at the base on ventral side; external sides almost straight, feebly convergent towards the apices; inner margins on dorsum expanded at the middle, each forming a triangular corner, its apices approaching to each other from left and right; inner margins on venter strongly sinuate and widely separated from each other, forming a remarkable level difference near the tips; inner sides each with comparatively small





Figs. 2–3. —— 2. *Rhagophthalmus formosanus* KAWASHIMA et SUGAYA, sp. nov., holotype male, dorsal view. —— 3. Right male antenna of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan, dorsal view. Scale: 0.25 mm.

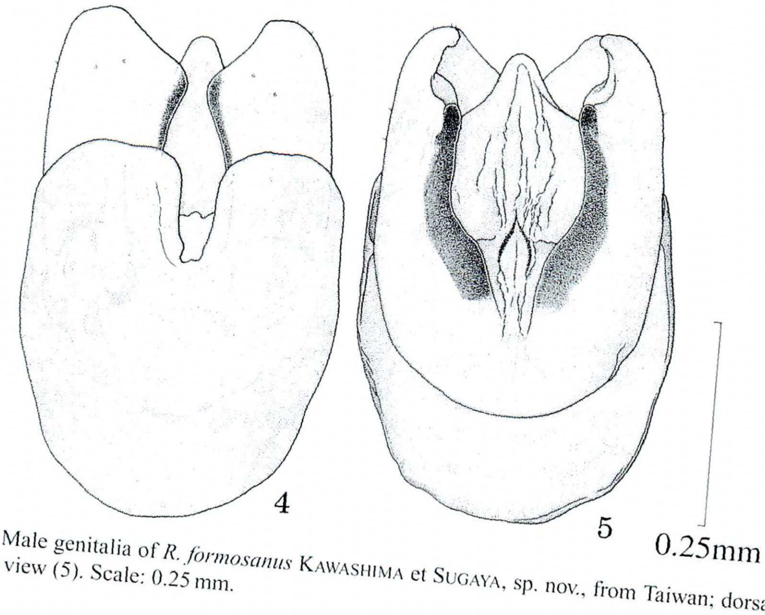
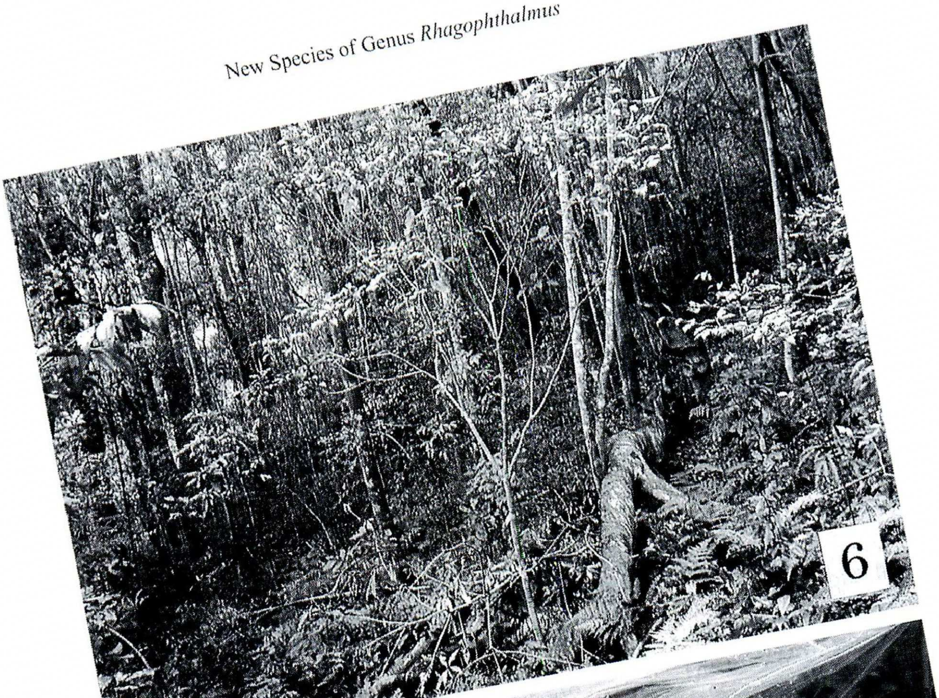


Fig. 4–5. Male genitalia of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan; dorsal view (4), ventral view (5). Scale: 0.25 mm.



Figs. 6–7. —— 6. Micro-habitat of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., at Meimu, Nantou Hsien, photo by HS., 5–V–2002. —— 7. FIT trap setting at the type locality, Meimu, Nantou Hsien, photo by HS, 5–V–2002.

though deep scooped out areas.

Measurement in mm. BL: 7.10 (in the holotype) (range 7.10–7.70); HW: 1.40 (1.40–1.55); PL: 0.95 (0.95–1.05); PA: 1.20 (1.20–1.35); PB: 1.35 (1.35–1.55); PW: 1.35 (1.35–1.55); EL: 5.45 (5.45–6.10); EW: 2.50 (2.40–3.00); EHW: 1.75 (1.75–2.05); HTL: 1.05 (1.05–1.25).

Female. Unknown (probably wingless larviform).

Type series (all dried). Holotype: 1♂, Meimu [梅木], 1,600 m in alt., Nantou Hsien, Taiwan, 5~10–IV–2002, H. SUGAYA leg. Paratypes: 2♂♂, same data as for the holotype.

The holotype is deposited in the insect collection of the National Museum of Natural Science (NMNS), Taichung, Taiwan. The paratypes are preserved in the luminous insect collection of KAWASHIMA's, Yokosuka-shi, Kanagawa, Japan.

Range. Taiwan.

Biology. Unknown.

Remarks. The color pattern of the body of this new species is common to many other species of the genus, for instance, *R. scutellatus* MOTSCHULSKY, 1853 (the type species of the genus) from East China, *R. ohbai* WITTMER, 1994 from the Yaeyama Isls. (Ishigaki-jima Is., Iriomote-jima Is. and Kohama-jima Is.), Southwest Japan, *R. minutus* KAWASHIMA et M. SATÔ, 2001 from North Thailand and *R. jenniferae* KAWASHIMA et M. SATÔ, 2001 from Taiwan, etc. However, it can be easily distinguished from the other congeners in external morphology, for example, the relative lengths of antennal segments, the relative lengths of the pronotum and elytra, and the shape of the male genitalia.

All the specimens of the type series were caught by FIT trap (about 1m in height, Fig. 7), which was set in a flattened small gap (Fig. 6) of a virgin forest. This collecting site is located in a place about 300m below a path on the ridge. The altitude of the collecting site is almost equivalent to the lowest limit of the virgin forest in this mountain area.

Etymology. The specific name is derived from another name of Taiwan, "Ilha Formosa", which means a beautiful island, firstly called by Portuguese in 1544.

Key to the Males of the Genus *Rhagophthalmus* from Taiwan and Japan

1(2) Elytra rather long, EL/PL 5.65 above. . . . . *R. formosanus* sp. nov. (Taiwan)

2(1) Elytra rather short, EL/PL 5.15 below.

3(4) EL/PL 4.63. Ventral side of meso- and metathoraces brown, weakly tinged with reddish. External sides of parameres in male genitalia almost straight, weakly divergent towards the apices. Luminous spots completely absent. . . . . *R. ohbai* WITTMER (Yaeyama Isls., SW Japan)

4(3) EL/PL 4.75–5.15. Ventral side of meso- and metathoraces reddish brown and fairly tinged with orange. External sides of parameres more or less weakly arcuate, gradually convergent towards the apices. Luminous spots on each abdominal segment. . . . . *R. jenniferae* KAWASHIMA et M. SATÔ (Taiwan)

Acknowledgement

We wish to express our cordial thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his critically reading the original draft and giving us constant advice, and to Dr. Masataka SATÔ of Nagoya-shi and Ms. Nagako KAWASHIMA of Pharmaceutical Division of Kirin Brewery Co. Ltd., Takasaki-shi, Gunma, for their kind help, and also to Dr. Munetoshi MARUYAMA of JSPS Research Fellow PD, Department of Zoology, National Science Museum (Nat. Hist.), Tokyo, for his kind advice and help.

We also thank Dr. Ming-Luen JENG of the University of Kansas, USA and Ms. Jennifer LAI of Kansas, USA, for their encouragement and kindness.

要　約

川島逸郎・菅谷　洋：台湾から新たに追加されたオオメボタル属の1新種の記載，および台湾と日本産の種の雄成虫における検索表．—— 台湾におけるオオメボタル属 *Rhagophthalmus* の種は，この属の基準種である中国産 *R. scutellatus* MOTSCHULSKY, 1853や，日本の八重山諸島産イリオモテボタル *R. ohbai* Wittmer, 1994にごく近縁と考えられる *R. jenniferae* KAWASHIMA et M. SATÔ, 2001が記載されたばかりであるが，その翌年の2002年に採集された1種について，その外部形態を詳しく検討した．その結果，体躯はかなり小型かつ各部位は非常に繊細で，雄交尾器の形状もまったく異なり，その他の本属の既知種からも明瞭に区別されることから，*R. formosanus* という新種名を与えて本報文で記載をおこない，これまで台湾と日本から知られたこの属の雄成虫における検索表を付与して，今後の基礎研究への資料とした．

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